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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,337	12/23/2003	Takako Takasu	740756-2691	5581

22204 7590 04/05/2006

NIXON PEABODY, LLP
401 9TH STREET, NW
SUITE 900
WASHINGTON, DC 20004-2128

EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,337

Applicant(s)

TAKASU ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2006 and 20 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date rec'd 20 Jan 2006.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

1. This Office action is in response to applicant's amendment filed January 19, 2006, which amends claims 1-14 and 17-20, cancels claims 15, 16 and 21, and provides a replacement abstract.

2. The objection to the abstract for reasons set forth in the Office action mailed October 19, 2005 is overcome by the replacement abstract filed January 16, 2006. However, there is an informality in the replacement abstract that needs correction as noted in the objection to the disclosure set forth later in this action.

The rejection under 35 U.S.C. 112, 1st paragraph, as set forth in the October 19th action is rendered moot by claim cancellation.

The issues raised in the rejection under 35 U.S.C. 112, 2nd paragraph, as set forth in the October 19th action are overcome by applicant's amendment (or rendered moot by claim cancellation). New issues raised by applicant's amendment are set forth later in this action.

The rejection under 35 U.S.C. 102(b) based on Tada et al., Sarker et al., or Pei et al. as set forth in the October 19th action is partly rendered moot by claim cancellation, and otherwise overcome by claim amendment.

The rejection under 35 U.S.C. 102(b) based on Tan et al. as set forth in the October 19th action is rendered moot by claim cancellation.

The rejection under 35 U.S.C. 102(e) based on Zhuang et al. as set forth in the October 19th action is rendered moot by claim cancellation.

The rejection under 35 U.S.C. 103(a) based on Tada et al., Sarker et al. or Pei et al, each in view of Zhuang et al. and Kamatani et al., as set forth in the October 19th action is overcome by claim amendment.

3. The disclosure is objected to because of the following informalities:

The replacement abstract filed January 19, 2006 shows a formula that includes a thiophene unit having variables R₇ and R₈, and a thiophene unit having variables R₉ and R₁₀. The original disclosure does not show a thiophene unit having variables R₉ and R₁₀. (R₉ and R₁₀ are shown in the original disclosure as variables in a pyrrole unit.)

Appropriate correction is required.

4. Claims 5, 7 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 further defines “the other one” of the plurality of electroluminescent elements. Claim 5 depends from claim 4 which requires a plurality of electroluminescent elements and defines “at least one” of the plurality. Since claim 4 and dependents may comprise more than two electroluminescent elements, it is not clear if “the other one” defined by claim 5 refers to all electroluminescent elements other than the “at least one” defined by claim 4. A similar question arises with respect to “the other one” as recited in claims 7 and 10.

Claim 5 refers to fourth and fifth electrodes, and depends from claim 4 which refers to first and second electrodes. The “fourth” and “fifth” terminology of claim 5 implies that there is a third electrode, but no third electrode is explicitly recited in claim 4 or 5. Clarification is required as to the minimum number of electrodes required for the device of claim 5.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-12 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhuang et al. (US 6,602,395 B1) in view of Tada et al. in *J. Phys. D: Appl. Phys.*, Vol. 30, pp. 2063-2068 (1997), or Sarker et al. in *Synthetic Metals*, Vol. 113, pp. 151-154 (2000) or Pei et al. in *Macromolecules*, Vol. 33, pp. 2462-2471 (2000).

See the entire patent to Zhuang et al. In particular, see column 1, line 8-c. 2, l. 43, c. 3, l. 35-65, c. 8, l. 33-c. 10, l. 22 and the Figures.

Zhuang et al. disclose light-emitting displays made by electrolytic polymerization. Zhuang et al. teach that copolymers comprising thiophene units and aromatic units may be used as the light-emitters, and that multi-colored displays may be made by using different polymers having different light-emitting characteristics. Zhuang et al. also teach that it was known in the

art at the time of the invention that multi-colored displays could be provided by methods other than electrolytic polymerization.

Zhuang et al. do not disclose a specific example of a polymer meeting the limitations of the polymer required by present independent claims 1, 2, 4, 6, 9 and 11, and claims dependent therefrom, but the required polymer is within the scope of polymers provided by polymerization of monomers of the third formula shown in column 9.

Each of the prior art references to Tada et al., Sarker et al. and Pei et al. disclose polymers similar to polymers made from monomers of the third formula shown in column 9 of the Zhuang patent, and similar to the polymers required by the present claims, and teach the use of the polymers as light-emitters in light-emitting devices having a pair of electrodes sandwiching the light-emitter.

In the article by Tada et al., for example, see Figure 1 on page 2064, and see the full paragraph in the second column on p. 2064. In the article by Sarker et al., for example, see poly-1, poly-2, poly-3 and poly-4 in Fig 2 on page 152, see the two full paragraphs in the first column on p. 152, and see Fig. 3 on p. 152. In the article by Pei et al., for example, see 3a-f in Scheme 1 on page 2465 and see the section titled "Light-Emitting Diodes from the Polymers", which begins on p. 2469.

The polymers disclosed by Tada et al., Sarker et al. or Pei et al. differ from the polymers required by the present claims in that the prior art polymers have only one of the substituents R_7/R_8 as defined in the present claims. Based on the teachings of Zhuang et al., one of ordinary skill in the art at the time of the invention would have reasonably expected that similar polymers

having two substituents on the thiophene unit, particularly alkyl or aryl substituents, would be electroluminescent polymers and could be used for the same purpose.

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize polymers similar to those taught by Tada et al., Sarker et al., or Pei et al., to provide light-emitting displays such as described by Zhuang et al. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to select suitable polymers from known polymers and derivatives thereof to make a multi-colored light-emitting display by Zhuang's electrolytic polymerization. Guided by Zhuang's teachings, it would have been a matter of routine experimentation to determine suitable monomers capable of being electrolytically polymerized to make a display according to Zhuang's method.

7. Claims 13, 14, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhuang et al. (US 6,602,395 B1) in view of Tada et al. in *J. Phys. D: Appl. Phys.*, Vol. 30, pp. 2063-2068 (1997), or Sarker et al. in *Synthetic Metals*, Vol. 113, pp. 151-154 (2000) or Pei et al. in *Macromolecules*, Vol. 33, pp. 2462-2471 (2000), as applied to claims 1-12 and 15-18 above, and further in view of Kamatani et al. (US 2003/0059646 A1).

Zhuang et al. provide pixellated light-emitting displays. The paragraph bridging columns 1 and 2 of the Zhuang patent indicates that there are conventional matrix-addressing schemes, but Zhuang et al. do not specifically describe the additional features required by present claims 13, 14, 19 and 20.

Data signal lines, scan signal lines, and nonlinear elements such as thin film transistors, are not novel components of pixellated light-emitting displays. For example, see the Figures in the published application of Kamatani et al.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to provide pixellated light-emitting displays as taught by Zhuang et al., and to include components known in the art of pixellated light-emitting displays, such as the electrical components disclosed for the pixellated light-emitting displays described by Kamatani et al.

8. Applicant's arguments filed January 19, 2006 have been fully considered but they are not persuasive with respect to the rejections under 35 U.S.C. 103(a) set forth in this action.

The examiner agrees that none of the references provides a specific example of a polymer within the scope of the present claims, but each of the relied upon references discloses polymers similar to the polymer required by the present claims. The third formula in column 9 of the Zhuang patent defines a relatively narrow group of possibilities for the heterocyclic rings, the narrow group encompassing the thiophene repeating units of formula (b-1) as defined in the present claims. The third formula in column 9 of the Zhuang patent is relatively broad with respect to the conjugated functionality that connects the two heterocyclic rings, but the secondary references demonstrate that polymers having a benzene repeating unit of formula (a-1) as defined in the present claims connecting two thiophene units similar to the unit of formula (b-1) were known in the art at the time of the invention to be useful for the same purpose as Zhuang's polymer.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one of ordinary skill in the art would have been motivated to combine the references given that the references pertain to similar subject matter, i.e. conjugated thiophene copolymers that are electroluminescent and can be used as emissive polymers in electroluminescent devices. In determining suitable units for the conjugated functionality of the third formula in column 9 of the Zhuang patent, one of ordinary skill in the art would be motivated to look to other conjugated thiophene copolymers known in the art, which would demonstrate examples of conjugated functionalities that could reasonably be expected to provide copolymers having the functions desired by Zhuang et al.

9. Miscellaneous:

In line 3 of claim 4: "comprising" should read --comprises--.

In line 4 of claim 5: "element" should read --elements--.

In line 2 of claim 8, "are" should read --is--.

In lines 7, 9 and 11 of claim 11: "comprises" should read --comprising--.

In line 13 of claim 11: "emits" should read --emit--.

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In line 15 of claim 11: "having" should read --have--.

In the penultimate line of claims 13, 19 and 20: "are" should read --is--.

The examiner suggests that various occurrences of "corresponding one" in claims 6, 9, 13, 19 and 20 be changed to --a corresponding one--.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
April 03, 2006



MARIE YAMNITZKY
PRIMARY EXAMINER

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